plates backed with a black material to avoid halation. I was not satisfied that halation would not throw out the accuracy of results somewhat. The experiments showed that my fears were groundless.

I think it satisfactory, at all events, for the photographic method of scaling, that Dr. Spitta's and my own coefficients come out so close as they do. The wedge seems to be very uniform in its coefficient of absorption throughout, as the results at the darker end were the same as those of the lighter.

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### Note on some Variable Stars near the Cluster 5 M.
### By A. A. Common, F.R.S.

On comparing some photographs of the Cluster 5 Messier lately taken with the five-foot telescope, I was surprised to find that on one plate there were stars that were quite invisible on the other plates. Considerable variation in the size of the impressions of the stars on the plate is not at all unusual, but the appearance of new stars of considerable magnitude on one plate, without a trace of them on plates taken before and after, is worthy of notice. Four photographs of this Cluster have been taken this year—on April 22, May 9, May 15, and June 9, with 25, 45, 66, and 45 minutes' exposure respectively.

The plate taken on May 15, with the longest exposure, contains five stars not shown on the other plates; the position with regard to the centre of the Cluster is given below :—

| No. | Mag. | Æ | $\delta$ |
|---|---|---|---|
| 1 | 9·5 | 20 $p$ | 19' N |
| 2 | 10·0 | 10 $f$ | 1·5 N |
| 3 | 9·5 | 40 $f$ | 12 S |
| 4 | 10·0 | 56 $f$ | 20 S |
| 5 | 9·0 | 66 $f$ | 10·5 N |

The magnitude of the above stars is estimated from the 9·5 (Argelander) star about 18' south of the Cluster.

The plate on which these stars appear has more stars than the other three plates, owing to the longer exposure, but stars of at least the 12th magnitude are shown on all of them; so that the presence of the new stars is not due to the longer exposure. On re-measuring the plates, to check the position of the five stars, I find that there is a great difference in the apparent magnitude of many of the stars near the Cluster, particularly with one star of about 10· magnitude, about 3$^s$ $f$ the centre of Cluster: on the 1st, 3rd, and 4th plates it is an unmistakable object; on the 2nd plate, taken May 9, it is there, but just the same magnitude as the other stars of the Cluster—possibly two magnitudes less than its magnitude on the other plates.

*On the Variable Star U (" Nova") Orionis.*   By J. E. Gore.

From a reduction of all my observations of this variable star since the date of its discovery, 1885 December 13, I find the following epochs of maxima :—

| | |
|---|---|
| 1885 Dec. 13? | 1889 Jan.  1 |
| 1886  „  11 | 1890  „  13 |
| 1887  „  30 | |

Treating these by the method of least squares, I find the following elements :—

$$\text{Maximum} = 1887, \text{Dec. } 26 \cdot 4 + 373^{d} \cdot 6 \text{ E.}$$

As, however, it seems probable that the star had passed the maximum previous to the night of its discovery, I have thought it safer to neglect this maximum, and deduce elements from the following observation of maxima :—

| | | | | |
|---|---|---|---|---|
| 1886 Dec. 11 | Gore | 1889 Jan.  1 | Gore |
| „  13 | Sawyer | 1890 Jan.  3 | Yendell |
| 1887 Dec. 30 | Gore | „  6 | Sawyer |
| 1888 Dec. 26 | Sawyer | „  13 | Gore |
| „  27·5 | Yendell | | |

Treating these by the method of least squares, I find the following provisional elements ·—

$$\text{Maximum} = 1887, \text{Dec. } 22 \cdot 36 + 373 \cdot 47 \text{ E.}$$

The following is a comparison between the observed maxima and those computed from the above elements :—

| Observed Maxima. | Computed Maxima. | O−C. days. |
|---|---|---|
| 1885 Dec. 13 | 1885 Dec.  5·42 | + 7·59 |
| 1886 Dec. 11 | 1886 Dec. 13·89 | − 2·89 |
| „  13 | „  13·89 | − 0·89 |
| 1887 Dec. 30 | 1887 Dec. 22·36 | + 7·64 |
| 1888 Dec. 26 | 1888 Dec. 29·83 | − 3·83 |
| „  27·5 | „  29·83 | − 2·33 |
| 1889 Jan.  1 | „  29·83 | + 2·17 |
| 1890 Jan.  3 | 1890 Jan.  7·3 | − 4·3 |
| „  6 | „  7·3 | − 1·3 |
| „  13 | „  7·3 | + 5·7 |

These elements give the date of the next maximum 1891, January 15·77.